

What is Claimed is:

1. A method of identifying a compound that selectively modulates at least one cellular activity of a plurality of cellular activities mediated by a common TLR, the method comprising:
  - (1) detecting modulation of a first cellular activity mediated by a TLR;
  - (2) detecting modulation of a second cellular activity mediated by the TLR; and
  - (3) identifying the test compound as a compound that selectively modulates at least one cellular activity of a plurality of cellular activities mediated by a common TLR if the test compound modulates the first cellular activity to a different extent than it modulates the second cellular activity.
- 10 2. The method of claim 1 wherein the test compound modulates the first cellular activity and does not modulate the second cellular activity.
- 15 3. A compound identified according to the method of claim 1.
4. A pharmaceutical composition comprising a compound identified according to the method of claim 1 or a pro-drug thereof.
- 20 5. A method of identifying a target compound having a target modulation profile of cellular activities mediated by a common TLR, the method comprising:
  - (1) selecting a target modulation profile of cellular activities mediated by a common TLR;
  - (2) determining the modulation profile of cellular activities mediated by a common TLR for a test compound; and
  - (3) identifying the test compound as a target compound if the modulation profile of the test compound conforms to the target modulation profile.
- 25 30 6. The method of claim 5 wherein the target modulation profile includes one or more TLR-mediated cellular activities that are not detectably modulated by a target compound.

7. The method of claim 5 wherein determining the modulation profile of a test compound comprises performing at least one assay for detecting modulation of a TLR-mediated cellular activity.

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8. A compound identified as a target compound according to the method of claim 5.

9. A pharmaceutical composition comprising a target compound identified according to the method of claim 5 or a pro-drug thereof.

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10. A method of selectively modulating cells of the immune system, the method comprising:

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(1) identifying a first immune system cell population having a first cellular activity mediated by a TLR, and a second immune system cell population having a second cellular activity mediated by the TLR;

(2) selecting a compound that modulates the first cellular activity to a different extent than it modulates the second cellular activity; and

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(3) contacting cells of the immune system with the selected compound in an amount effective to modulate at least one of the cellular activities, thereby modulating cells of at least one cell population.

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11. The method of claim 10 wherein the method further comprises determining a TLR expression profile of the first cell population and a TLR expression profile of the second cell population.

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12. The method of claim 11 wherein the step of selecting a compound comprises comparing the TLR expression profile of the first cell population and the TLR expression profile of the second cell population with a TLR-mediated cellular activity modulation profile for the compound.

13. The method of claim 10 wherein modulating a cellular activity comprises detectably increasing the cellular activity or detectably decreasing the cellular activity.

14. The method of claim 10 wherein the compound modulates the first cellular activity and does not detectably modulate the second cellular activity.
- 5 15. The method of claim 10 wherein the compound modulates both cellular activities.
16. The method of claim 10 wherein at least one cell population is modulated *in vitro*.
- 10 17. The method of claim 10 wherein at least one cell population is modulated *in vivo*.
18. A method of treating a subject having a condition treatable by selective modulation of cellular activities mediated by a common TLR, the method comprising:
- 15 (1) identifying a target modulation profile of cellular activities mediated by a common TLR effective for treating the condition;
- (2) selecting a compound having a modulation profile of cellular activities mediated by a common TLR that conforms to the target modulation profile; and
- 20 (3) administering to the subject an amount of the compound effective for treating the condition.
19. The method of claim 18 wherein the condition is an infectious disease or a neoplastic condition.
- 25 20. The method of claim 19 wherein the infectious disease is a viral disease, a fungal disease, a parasitic disease, a bacterial disease, or a prion-mediated disease.
21. The method of claim 19 wherein the neoplastic condition is an intraepithelial neoplasm, a pre-cancerous neoplasm, or a cancer.
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